SOURCE AREA SOIL ASSESSMENT
FORMER AL PHILLIPS FACILITY
MARYLAND SQUARE SHOPPING CENTER
3661 MARYLAND PARKWAY
LAS VEGAS, NEVADA

FOR AL PHILLIPS THE CLEANER

URS CORPORATION
JOB NO. 26698724.00005
FEBRUARY 23, 2007

URS

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICIES

1 INTRODUCTION

URS Corporation (URS) has prepared this Source Area Soil Assessment report at the request of Al Phillips the Cleaner, Inc. (Al Phillips). The soil assessment was performed to further evaluate the vertical and lateral extent of tetrachloroethylene (PCE) impact to soil beneath the former dry cleaning facility. Remedial actions will be based upon the results of this additional soil assessment, a cost/benefit analysis, and an agreed upon site-specific cleanup level (SSCL).

1.1 SITE LOCATION

The former Al Phillips facility is located in the Maryland Square Shopping Center at 3661 South Maryland Parkway, Las Vegas, Nevada (Figure 1). The site is located on the northeast corner of Parcel No. 162-15-602-009. The former facility was situated on the west side of Maryland Parkway, north of Twain Avenue, and across the street from The Boulevard Mall. The site is located in Township 21 South, Range 61 East, within the southeast quarter, of the southeast quarter, of the northeast quarter of Section 15.

1.2 SITE HISTORY AND INFORMATION

Based on Clark Count Assessor records, the area was first developed in 1969. The former Al Phillips facility was operated as a dry cleaner first by another firm and then by Al Phillips from 1969 to some time in 2000. One dry cleaning unit was operated at the facility during that time. The current property owner, Maryland Square LLC, demolished the former building including the concrete floor and foundations during July and August of 2006. To date, Maryland Square LLC has not provided information to Al Phillips regarding future development plans or timing for the site. Currently the site is covered by asphalt except for the location of the former building, which is dirt. The site is currently fenced. Storm water exits the site by sheet flow eastward toward Maryland Parkway and enters storm drain drop inlets on Maryland Parkway. The elevation of the site is approximately 1,993 feet above mean sea level.

Based on a subsurface investigation in June 2005 (URS, 2005), the lithology beneath the former Al Phillips facility is composed of the following: 1) fine grained sand which is likely fill material imported during site construction in the early to mid 1960s; 2) a layer of fine sandy silt which is likely native soil; 3) a thick layer of caliche that is firm- to well-cemented; and 4) a find sandy silt and a thin layer of sand near groundwater. Details of detected PCE soil contamination are provided in Section 1.3; however, PCE was detected in June 2005 to at least 16.5 feet below ground surface (bgs). Groundwater beneath the former facility is approximately 17 feet bgs.

The only significant potential migration pathway for PCE to leave the site is via groundwater that flows eastward across Maryland Parkway. Based on recent groundwater monitoring results, PCE is detectable at least 3,300 feet east of the site.

1.3 PRIOR INVESTIGATIONS

Converse Consultants (Converse) performed several subsurface assessments and groundwater sampling events at the former Al Phillips facility from August 2000 through March 2004. URS reviewed Converse reports and other documents obtained from Converse and the Nevada Department of Environmental Protection (NDEP) and evaluated the data to assess whether or not the PCE source area and the nature of PCE concentrations in soil was characterized. Converse's findings indicate that PCE was detected at concentrations ranging from 110 micrograms per kilogram (µg/kg) to 15,000 µg/kg in four (B-1 through B-4) of five soil samples (B-1 through B-5) from beneath the former Al Phillips facility.

In April 2005, Al Phillips performed additional soil sampling at the former facility including drilling seven hollow-stem auger boreholes (B-6 through B-10) and two hand auger holes (B-11 and B-12) inside the former facility. Based on PCE analytical results from the soil samples collected during the investigation, eleven of nineteen soil samples exceeded the interim remediation goal of 100 µg/kg identified by NDEP. Eight of the soil samples contained PCE that exceeded the EPA residential PRG of 480 µg/kg and four of the soil samples contained PCE that exceeded the EPA industrial PRG of 1,300 µg/kg. PCE soil concentrations ranged from 38 µg/kg in borehole B-9 at 10 feet bgs to 120,000 µg/kg in borehole B-10 at 10 feet bgs. Borehole B-10 was located next to one of the floor drains and north of the former dry cleaning equipment.

Figure 2 is a scaled site plan of the former Al Phillips facility and shows the locations of boreholes B-1 thought B-5 drilled by Converse, boreholes B-6 through B-12 drilled by URS, and the location of the former dry cleaning equipment and floor drains. Figure 2 also lists the concentrations of PCE detected in soil samples B-1 thought B-12 beneath the former facility and the respective depths of the samples.

Table 1-1 lists the boreholes, samples depths, sampling dates, and PCE concentrations detected during the prior Converse and URS assessments. No other VOC were detected in soil during these initial soil assessments.

Table 1-1. Summary of Prior Borehole Soil Sample Data

Borehole ID	Sample Depth (in ft.)	Sample Date	PCE Concentration (µg/kg)
B-1*	2.5	May-02	15,000
B-2*	4	May-02	110
B-3*	3	May-02	170
B-4*	4	May-02	110
B-5*	3	May-02	ND
B-6	5	Apr-05	830
	10		300
	15		1,500

Borehole ID	Sample Depth (in ft.)	Sample Date	PCE Concentration (µg/kg)
B-7	5	Apr-05	850
	10		52
	15		69
B-8	5	Apr-05	4,700
	10		360
	15		640
	15(1)		180
B-9	5	Apr-05	ND
	10		38
	10(1)		50
	15		ND
B-10	5	Apr-05	1,200
	10		120,000
	15		3,500
B-11	2.5	Apr-05	46
B-12	3.5	Apr-05	ND

Note: * = Samples collected by Converse

2 SUBSURFACE CONDITIONS

2.1 UTILITY LOCATION

Figure 3 shows the approximate location of the sanitary sewer line for the buildings located on the northeast corner of the Maryland Square Shopping Center. This information was obtained from an investigation performed by Converse (2004). Based on this data, the sanitary sewer lines for each of the units in the former building exited the back side of the former building in the alleyway on the north side, traversed west, then turned south on the west side of the former building, turned east on the south side of the building, and exited the property into Maryland Parkway along the front side of the shops.

2.2 SITE GEOLOGY AND HYDROGEOLOGY

The site is located near the center of the Las Vegas Valley sedimentary basin. Based on the assessment performed by URS in 2005, the stratigraphy beneath the former Al Philips facility consists of a 1.5-foot to 2-foot layer of fine sand, then a 1.5-foot to 2-foot layer of hard fine sandy silt, then a 6.5-foot to 8.5-foot layer of firm to hard caliche, overlaying a 3.5-foot to 4.5-foot layer of fine sandy silt just above groundwater. A layer of sand was encountered at the bottom of a couple borehole just above groundwater. Cross Sections A-A' through D-D' (Figure 2) on Figures 4 through 7 show the subsurface lithology beneath the former facility, the locations and depths of boreholes, the soil sample depths, the concentration of PCE in the soil samples, and the approximate groundwater elevation.

The Las Vegas Wash is the principal hydrologic feature in the Las Vegas Valley. Based on recent groundwater measurements in shallow monitoring wells, the depth to groundwater beneath the site is approximately 16 to 17 feet bgs. Figure 3 is a groundwater gradient map that shows the approximate elevation of groundwater beneath the former facility and the direction of groundwater flow. Groundwater flow is generally toward the east at a gradient of approximately 0.045-feet (vertical) per foot (horizontal).

3 PURPOSE AND SCOPE OF WORK

3.1 PURPOSE

The purpose of the scope of work (SOW) for the additional soil assessment that occurred in January 2007 in the source area of the former dry cleaning equipment and the floor drains at the former facility was four fold: 1) further evaluate the vertical and lateral extent of PCE soil contamination; 2) further evaluate the concentrations of PCE in the source area; 3) reassess the extent and cost of potential source removal; and 4) further evaluate strategic locations for installation of a future groundwater remediation system at the site. The immediate intent of the additional soil assessment was to more accurately characterize the soil and contaminant conditions beneath the former Al Phillips facility so that cost effective source removal can be performed.

3.2 SCOPE OF WORK

The soil assessment SOW was accomplished by performing the following tasks:

- Drilling seventeen hollow-stem auger boreholes within and around the perimeter of the previously identified soil impact located under the former building location.
- Collecting soil samples from the ground surface to approximately 13 - 16 feet bgs in each borehole to evaluate the subsurface lithology and perform field screening of site soils for the presence of PCE.
- Selecting specific soil samples for submittal to a stationary analytical laboratory for analysis.
- Based on field observations and analytical results, estimate the vertical and lateral extent of and the quantity (cubic yards – cyd) of in-situ and excavated PCE-contaminated soil at or above an interim remedial goal of 100 µg/kg, the U.S. Environmental Protection Agency's (EPA) residential Primary Remediation Goal (PRG) of 480 µg/kg, and the EPA industrial PRG of 1,300 µg/kg
- Revising a cost/benefit analysis for source removal at the former facility.
- Preparing this Source Area Soil Assessment report to identify a proposed SSCL and obtain approval from NDEP to proceed to the soil remediation SOW.

4 RATIONALE

4.1 RATIONALE

This section presents the rationale for selecting the location of boreholes and the depth and number of soil samples, and the method for analyzing soil samples.

4.1.1 Analytes of Concern

Based on the results of investigations performed by Converse and URS, the contaminant of concern is PCE.

4.1.2 Borehole Locations and Depths

Seventeen soil-sampling boreholes were drilled near the location of former boreholes B-1 through B-12 (drilled by Converse and URS) at the former Al Phillips facility. Boreholes B-13 through B-29, drilled during this additional soil assessment, were located in and around the prior boreholes (B-1 through B12) to further delineate the vertical and lateral extent of PCE soil contamination, to further evaluate the concentrations of PCE in soil, and to revaluate the quantities of PCE-contaminated soil. Boreholes were drilled so as not to encounter groundwater that was anticipated to be at 17 feet bgs. Drilling depths varied because the ground surface was uneven due to the demolition of the former building and the removal of the concrete floor. Figure 2 shows the locations of boreholes B-1 through B-29.

4.1.3 Soil Sampling

Soil samples were generally collected at or near the ground surface to the target depth in each borehole in order to better evaluate the subsurface lithology and lateral and vertical extent of PCE in the vadose zone. Based on sample recovery during drilling, some sampling depths were modified in an effort to collect sufficient samples to accomplish these goals. Soil samples were field screened using a Photoionization Detector (PID) and these readings were used to move a few borehole locations or to add boreholes to characterize the extent of PCE contamination.

4.1.4 Soil Analysis

Soil samples were analyzed for VOC (specifically PCE) by EPA method 8260B, as PCE is the target compound of concern at the site.

5 FIELED PROCEDURES

5.1 FIELD METHODS AND PROCEDURES

URS personnel performed the field SOW following specific field methods and procedures. This section outlines the field equipment that was used, discusses the soil sampling procedures that were followed, presents the field documentation that was performed, and describes sample documentation and transport.

5.1.1 Field Equipment

URS field personnel had appropriate sampling materials, field screening equipment, and personal protective equipment onsite during the subsurface investigation. This included but was not limited to:

Paper towels	De-ionized water
Soil sampling sleeves	Sampling sleeve end caps
Teflon sheets	Sealing plastic bags
Cooler and ice	Sample containers
PID	First aid kit
Chain-of-custody forms	Borehole logs
Telephone	Health and safety equipment

5.1.2 Underground Utility Clearance

Call-Before-You-Dig was notified one week prior to performing field activities. Subsurface public utilities within the right-of-way were marked by the service but the focus of the assessment was near the former building footprint where utility lines are on private property and potentially were removed during building demolition.

5.1.3 Soil Sampling

Two soil samples were generally collected every 5-foot interval beginning at or near the ground surface to the target depth in each borehole (B-13 through B-29). A truck-mounted hollow stem auger drill rig was used to drill the boreholes and collect the soil samples. Soil samplers were driven ahead of the augers and the augers were advanced at 2.5-foot to 5-foot intervals. The drive samplers, loaded with three 6-inch stainless steel sleeves, were placed on the drive rod and lowered into the hollow stem auger. The drive head was then advanced approximately 1.5 feet to 2 feet into the ground using an approximate 140-pound drive hammer. The sampling head was then removed from the borehole, the soil samples were taken from the drive sampler, and the borehole was advanced another 2.5-feet to 5-feet. This sampling procedure continued until soil samples were collected to the bottom of the borehole. Boreholes were backfilled to near ground surface using hydrated bentonite pellets. One hundred and ten (110) soil samples were collected from the seventeen boreholes drilled during this additional soil assessment.

The field geologist logged soil samples and subsurface lithology during drilling activities. Borehole logs are provided in Appendix A. These logs list the depth soil samples were collected in each borehole, show the field Photoionization Detector (PID) reading take for samples, and identify the subsurface lithology encountered at each sampling location. Soil collected in the sampling sleeves, and grab soil samples from the augers, was observed by the URS field personnel and logged in accordance with the Unified Soil Classification System (USCS). One portion of the sleeved soil samples was sealed, labeled, placed in a self-sealing plastic bag, and stored in a cooler with ice. Another portion of the sleeved soil samples, and the grab soil samples, were placed in a self-sealing plastic bag, the bag was marked with the borehole number and sampling depth, and the bag was placed in the sun for at least 15 minutes to allow soil vapors to off-gas into the bag. URS field personnel field-screen these bagged soil samples for the presence of VOCs using a PID. The results of the field screening were recorded on the borehole log (Appendix A).

Sleeved soil samples were numbered by borehole number, a dash, then the depth from which the sample was collected. For example, a soil sample collected from 2-feet bgs in Borehole B-13 was labeled, B-13-2. Sleeved soil samples were labeled with the date and time the sample was collected, the sample and borehole number, and name of the firm and signature of the individual collecting the sample. A chain-of-custody seal was placed on the sleeved sample. A chain-of-custody from was filled out with all the appropriate sample information and accompanied the sleeved soil samples to the analytical laboratory. Copies of Chain-of Custody forms are provided in Appendix C.

5.1.4 Decontamination Procedures

Decontamination of sampling or field measurement equipment was conducted consistently to assure the quality of samples collected. All equipment that came into contact with potentially contaminated soil was decontaminated. Disposable equipment intended for one-time use was not decontaminated, but was packaged for appropriate disposal. Decontamination of the drive samplers occurred prior to and after each use.

All sampling devices were decontaminated by the following steps:

1. Wash with non-phosphate detergent
2. Tap water rinse
3. De-ionized/distilled water rinse.

Equipment was decontaminated in a designated area. URS field personnel labeled the one drum containing the wash/rinse water, identifying the material and including the date, firm, and signature of the URS personnel. The drum was stored on-site and appropriately labeled.

5.1.5 Field Documentation

Field activities were documented in writing and photographs were taken. URS personnel completed daily field logs and borehole logs (Appendix A). These logs will include all the information discussed in this section. Each daily field log was dated and signed by URS personnel. Photographs were taken to record field activities (Appendix B).

5.1.6 Sample Documentation and Shipment

Samples were labeled with the date and time the sample was collected, the sample number, location where the sample was collected, and name for the firm and initials of the individual collecting the sample. The sample containers were placed in self-sealing plastic bags, and stored in a cooler with ice. All samples were recorded on the borehole logs and the field daily log.

Chain-of-Custody forms were used to document sample collection and shipment to laboratories for analysis. All sample shipments for analysis were accompanied by chain-of-custody forms. Forms were completed and sent with the samples to the laboratory for each shipment. The Chain-of-Custody forms identified the contents of each shipment and maintained the custodial integrity of the samples. Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until the samples were delivered to or picked up by a laboratory representative, the custody of the samples was the responsibility of URS personnel. URS field personnel signed the Chain-of-Custody forms in the "relinquished by" box and noted the date and time. The Chain-of-Custody forms were signed by the laboratory representative.

5.1.7 Site Restoration

Since the former building had been demolished and removed form the site, only bare soil and asphalt remained. The are had been fenced to keep the public off the site. After the boreholes were sealed with bentonite soil cuttings from the boreholes were left on the ground surface and no further restoration of the surface was warranted at the time.

5.2 SAMPLE CONTAINERS, ANALYTICAL METHODS, AND PRESERVATION

Table 5-1, below, lists the type of sample, type, number, and size of container, chemical preservative, analytical method, and holding times for soil samples.

Table 5-1. Summary of Sample Containers, Analytical Methods, and Preservation

Sample Type	Type and Number of Container	Size of Container	Chemical Preservation	EPA Analytical Method	Holding Time
Soil	Stainless steel sleeve	6-inch length	None	VOC by SW 8260B (1)	14 days
QC Water Samples	Clear glass	40 milliliter VOA vials	HCl	VOC by SW 8260B (2)	14 days

Notes:
(1) Five duplicate soil samples were collected.
(2) One laboratory trip blank sample was used each day for analysis of VOC.
VOA = volatile organic analysis

5.3 QUALITY CONTROL

The type and number of field quality control samples collected during the proposed investigation was limited. Quality control samples consist of field duplicates, equipment or rinsate blanks, and trip blanks. Duplicate soil samples collected in the field provide precision information for the entire measurement system including sample acquisition, homogeneity, handling, shipping, storage, preparation, and analysis. The identity of duplicate samples is not revealed to the analysts and laboratory personnel. Duplicate samples are typically collected at a frequency of approximately 10 percent of the total investigative samples for each matrix.

Contamination of samples potentially introduced by reuse of equipment can be detected by means of analyzing an equipment or rinsate sample. Rinsate blanks are typically collected at a frequency of approximately 10 percent of the total investigative samples. Rinsate blanks consisting of the final rinse water are typically collected for non-disposable or non-dedicated sampling equipment after decontamination has been performed. Trip blanks are used to investigate the integrity of the transport of samples to and from the laboratory. Typically, one trip blank per cooler per day is used.

Laboratory QA samples are called Laboratory Control Samples (LCS) and include method blank and matrix spikes. The LCS is based on the use of a standard, control matrix to generate precise and accurate data that are compared daily to the control limits. LCS information, in conjunction with method blank data, is used to assess daily laboratory performance. Matrix Spikes (MS) use an actual environmental sample to generate precision and accuracy that may be affected by the matrix. Typically, the MS is performed in duplicate as an MS/MS duplicate pair. MS/MS duplicate precision and accuracy information, supplemented with field blank results, are used to assess the effect of the matrix and field conditions on analytical data.

5.3.1 Duplicate Samples

The SOW called for the collection of five duplicate soil samples during the assessment at the former Al Phillips facility. Whoever, based on the hardness of soil encountered during sampling only four duplicate soil samples (B-15-1.5, B-21-10.5, B-22-1.5, B-29-15.5) were collected. Based on field PID screening readings only one of the duplicate soil samples (B-29-15.5) was submitted for analysis of VOC.

5.3.2 Rinsate/Equipment Blank

Three rinsate or equipment blanks were collected during the soil assessment at the former Al Phillips facility as the sample drive heads were cleaned and reused.

5.3.3 Field Trip Blanks

Seven trip blanks were used and analyzed.

5.4 DISPOSAL OF RESIDUAL MATERIAL

The EPA's National Contingency Plan (NCP) requires that management of investigative-derived waste (IDW) generated during sampling activities comply with all applicable or relevant and appropriate requirements (ARARS) to the extent practicable. Field activity followed the *Office of Emergency and Remedial Response (OERR) Directive 9345.3-02* (May 1991), which provides the guidance for the management of IDW. During the field activities, different types of IDW were generated, including used personal protective equipment (PPE), disposable sampling equipment, decontamination fluids, and soil cuttings for boreholes.

Used PPE and disposable equipment were double-bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment disposed of which could still be reused was rendered inoperable before disposal in the refuse dumpster.

Decontamination fluids that were generated during the field investigation consisted of de-ionized water and decontamination water with non-phosphate detergent. These types of IDW were contained in one 55-gallon DOT-approved drums and stored in the area adjacent to the former Al Phillips facility. The drum was appropriately labeled was temporarily stored prior to transport and disposal.

Analytical results from the soil were used as a minimum basis for disposal of the wastes. PCE containing water will be disposed of at a permitted disposal facility. Waste characterization documentation and manifests (if required) will prepared by URS for signature by Al Phillips.

6 RESULTS OF SOIL ASSESSMENT

6.1 SUBSURFACE LITHOLOGY

Based on the additional drilling and soil sampling performed during this assessment, the initial subsurface lithology included a layer of hard fine silty sand beneath the concrete floor of the former facility that is believed to have been compacted base material placed during construction of the building(s). Based on our field observations during this assessment, a portion of this material appears to have been either removed or pushed around on site during demolition of the former building.

The current topography of the site varies in elevation since demolition of the former buildings. URS measured (to within 3-inches) the elevation of the ground surface at boreholes B-13 through B-29 using the elevation of monitoring well MW-1 as a reference point. The approximate elevation of soil samples collected from boreholes B-6 through B-29 (listed on Table 4.1) is based on the difference in the elevation of well MW-1, the elevation of ground surface or the concrete slab at the boreholes, and the depth below ground surface that the soil samples were collected. The orientation of the subsurface lithology is also based on this same method.

In general, the subsurface lithology consists of a layer of fine silty sand and or sandy silt, of variable thickness, on top of a 3-foot to 12-foot thick layer of firm to hard caliche, overlaying a 2-foot to 8-foot layer of fine sandy silt just above groundwater. One or two layers of sand were encountered either above, within , or below the cliché in several boreholes during this assessment. Cross Sections A-A' through D-D' on Figures 4 through 7 show the generalized subsurface lithology beneath the former facility. These cross sections also show the locations and depths of boreholes, the soil sample depths, the concentration of PCE in the soil samples, and the expected groundwater elevation. Groundwater was not encountered during this assessment.

6.2 ANALYITCAL RESULTS

Fifty five of the 110 soil samples collected from boreholes B-13 through B-29 during this assessment were submitted to a State certified analytical laboratory for analysis of VOC by EPA test method SW 8260B. Selection of soil samples for submittal to the laboratory for analysis was based on field observations including the PID soil screening results. These results are listed on Table 6.1.

Based on the soil analytical results from this assessment, 54 of 55 soil samples submitted were found to contain PCE concentrations ranging from 4.3 µg/kg to 56,000 µg/kg. The highest concentration of PCE detected in soil during this assessment was in soil sample B-24-5 in borehole B-24 located within approximately 5-feet of borehole B-10 where the highest concentration of PCE detected during the prior assessment conducted by URS was 120,000 µg/kg. Thirty-eight soil samples contained PCE at concentrations at or above an interim remedial goal of 100 µg/kg. Seventeen samples contained PCE at or above the U.S. Environmental Protection Agency's (EPA) residential PRG of 480 µg/kg. Six samples contained PCE at or above the EPA industrial PRG of 1,300 µg/kg (Table 6.1). Fifty-three soil samples contained PCE above 7 µg/kg, which NDEP has indicated would be an acceptable level for leaving in-place to protect groundwater. Analytical results for soil samples collected during this assessment (boreholes B-13 through B-29) are listed in Table 6.1. Analytical results for soil samples collected during the prior URS assessment (boreholes B-6 through B-12) are shown in the table on Figure 2. Chain-of-Custody forms and laboratory analytical results are provided in Appendix C.

TABLE 6-1 PCE CONCENTRATIONS IN SOIL SAMPLES

Borehole ID	Sample Date	Sample Number	Sample Depth (in ft.)	Field PID Reading PCE Concentration (in ppm)	Laboratory Reported PCE Concentration (in µg/kg)
B-13	1/29/2007	B-13-2	1991.23	3.5	NA
		B-13-3.5	1989.73	1.7	NA
		B-13-5.5	1987.73	1.2	NA
		B-13-8	1985.23	3.2	NA
		B-13-10	1983.23	3.5	NA
		B-13-13	1980.23	3.5	110
		B-13-16	1977.23	14	300
B-14	1/29/2007	B-14-1.5	1993.02	4.3	NA
		B-14-3	1991.52	2	NA
		B-14-6.5	1988.02	4	340
		B-14-8	1986.52	2.8	64
		B-14-10	1984.52	8.1	62
		B-14-13.5	1981.02	3.9	NA
		B-14-16	1978.52	42.8	450
B-15	1/30/2007	B-15-1	1993.69	NA	NA
		B-15-1.5 DS	1993.19	28	NA
		B-15-5	1989.69	9.2	460
		B-15-8	1986.69	12.5	44
		B-15-13	1981.69	46	NA
		B-15-15	1979.69	90.2	94
B-16	1/29/2007	B-16-1.5	1992.42	NA	NA
		B-16-5.5	1988.42	7.2	NA
		B-16-7.5	1986.42	17	290
		B-16-10.5	1983.42	10.6	210
		B-16-13.5	1980.42	17.7	NA
		B-16-15.5	1978.42	51	150
B-17	1/30/2007	B-17-1.5	1993.55	18	NA
		B-17-3	1992.05	11.3	NA
		B-17-5	1990.05	20.7	460
		B-17-8	1987.05	25.5	NA
		B-17-10	1985.05	35.4	570
		B-17-13	1982.05	8.1	NA
		B-17-15	1980.05	105	680

Borehole ID	Sample Date	Sample Number	Sample Depth (in ft.)	Field PID Reading PCE Concentration (in ppm)	Laboratory Reported PCE Concentration (in µg/kg)
B-18	1/31/2007	B-18-1	1993.23	2.1	NA
		B-18-3	1991.23	13.5	NA
		B-18-5	1989.23	4.9	140
		B-18-8	1986.23	4	NA
		B-18-10	1984.23	3.8	NA
		B-18-13	1981.23	63.8	480
		B-18-15	1979.23	137	140
B-19	1/30/2007	B-19-1	1993.48	2.5	NA
		B-19-2	1992.48	4.1	NA
		B-19-5	1989.48	14.8	560
		B-19-8	1986.48	2.6	NA
		B-19-10	1984.48	50.5	21
		B-19-13	1981.48	14.2	270
		B-19-15	1979.48	60.8	1,500
B-20	1/31/2007	B-20-1	1993.47	43.6	NA
		B-20-3	1991.47	3.6	NA
		B-20-5	1989.47	11.3	270
		B-20-8	1986.47	6	NA
		B-20-10	1984.47	135	1,200
		B-20-13	1981.47	283	1,600
		B-20-15	1979.47	494	860
B-21	1/31/2007	B-21-1	1991.13	2.2	NA
		B-21-3	1989.13	6.7	NA
		B-21-5	1987.13	2.1	NA
		B-21-8	1984.13	58.3	110
		B-21-10	1982.13	78	NA
		B-21-10.5 DS	1981.63	83.8	NA
		B-21-13	1979.13	142	380
B-22	1/29/2007	B-22-0.5	1992.82	NA	8.6
		B-22-1.5 DS	1991.82	42	21
		B-22-3	1990.32	6.9	NA
		B-22-5.5	1987.82	5.1	NA
		B-22-7.5	1985.82	NA	NA
		B-22-10	1983.32	23.8	91
		B-22-13.5	1979.82	8.5	NA
		B-22-14.5	1978.82	34.1	380
B-23	1/29/2007	B-23-1.5	1990.88	4.8	NA
		B-23-3	1989.38	8.2	350
		B-23-5	1987.38	NA	4.3 J
		B-23-8	1984.38	8.2	NA

Borehole ID	Sample Date	Sample Number	Sample Depth (in ft.)	Field PID Reading PCE Concentration (in ppm)	Laboratory Reported PCE Concentration (in µg/kg)
B-23	1/29/07	B-23-8	1984.38	8.2	NA
		B-23-13	1979.38	48.3	86
B-24	1/30/2007	B-24-1.5	1991.88	6.7	NA
		B-24-2.5	1990.88	6.1	NA
		B-24-5	1988.38	40.5	56,000
		B-24-6.5	1986.88	41.5	NA
		B-24-8	1985.38	49.1	6,800
		B-24-10	1983.38	8.8	NA
		B-24-13	1980.38	60.9	4,300
B-25	1/29/2007	B-25-.05	1992.18	NA	NA
		B-25-1 DS	1991.23	1.2	NA
		B-25-3	1989.23	1.9	NA
		B-25-5	1987.23	1.5	490
		B-25-8	1984.23	29	NA
		B-25-10	1982.23	58.1	290
		B-25-13	1979.23	83.3	140
B-26	1/30/2007	B-26-1.5	1991.73	2.3	NA
		B-26-2.5	1990.73	50.5	390
		B-26-5	1988.23	1,628	900
		B-26-8	1985.23	1,816	870
		B-26-10	1983.23	3,679	7,200
		B-26-13	1980.23	319	1,000
B-27	1/30/2007	B-27-1.5	1990.82	2	NA
		B-27-3	1989.32	1.3	NA
		B-27-5	1987.32	30.9	430
		B-27-8	1984.32	4.2	NA
		B-27-10	1982.32	1.2	NA
		B-27-13	1979.32	0.7	540
B-28	1/31/2007	B-28-5	1987.15	5.3	NA
		B-28-8	1984.15	NA	NA
		B-28-10	1982.15	37.6	91
		B-28-13	1979.15	52.3	74
B-29	1/31/2007	B-29-5	1989.98	2.6	320
		B-29-8	1986.98	1.4	NA
		B-29-10	1984.98	15.3	ND
		B-29-13	1981.98	33.7	NA
		B-29-15	1979.98	31	27
		B-29-15.5 DS	1979.48	14.1	6

Notes: DS = Duplicate sample ND = Not detected above RL. J = ,RL > MDL
NA = Not analyzed PCE = Perchloroethylene (tetrachloroethene) ppm = Parts per million

6.3 ESTIMATED EXTENT OF PCE CONTAMINATED SOIL

Figures 4 through 7 show cross sections A-A’ and D-D’, respectively, through the subsurface beneath the former Al Phillips facility. Cross sections A-A’ and B-B’ are oriented north south through the site, while cross sections C-C’ and D-D’ are oriented east west thought the site (Figure 2). These cross sections show the location of boreholes (including boreholes B-1 through B-12), elevation of soil samples, approximate groundwater depth, lithology, and the estimated lateral and vertical extent of PCE-contaminated soil along these cross sections at the interim remedial goal of 100 µg/kg, the U.S. Environmental Protection Agency’s (EPA) residential Primary Remediation Goal (PRG) of 480 µg/kg, and the EPA industrial PRG of 1,300 µg/kg. Based on the data available, the extent of PCE soil contamination to non-detect is not known, but has been estimated on the cross sections. Figure 8 shows the estimated lateral extent of PCE-contaminated soil in plan view at the interim remedial goal of 100 µg/kg, the EPA residential PRG of 480 µg/kg, and the EPA industrial PRG of 1,300 µg/kg without regard to vertical variance. The approximate lateral and vertical extents on Figures 4 through 8 are based on conservative assumptions regarding the concentration contours for the interim remediation goal and the residential and industrial PRGs for PCE.

The interpretation of this data seams to indicate that the major source area PCE soil contamination exists between boreholes B-8 and B-15 on the south and boreholes B-25 and B-26 on the north (Figure 8) near the center of the former Al Phillips facility where north-south and east-west floor drains were located west and north of the former dry cleaning unit (Figure 8). These drains were located for catching spills or releases of water from the washers and dry cleaner. Our interpretation shows that the major soil contamination is beneath these floor drains.

Initial (November 2006) and revised (this assessment) estimated cubic yardage (cyd) volumes for PCE-contaminated soil at NDEPs’ concentration to protect groundwater of 7 µg/kg, the interim remedial goal of 100 µg/kg, the EPA residential PRG of 480 µg/kg, and the EPA industrial PRG of 1,300 µg/kg were calculated using estimated diameter and height values from Figures 4 through 8 utilizing the following equation:

Excavated cyd of PCE-contaminated soil = (pr^2 x h) x 1cyd/27sqft x 1.5 where:

r = radius of the soil contamination
h is the height of the soil contamination
cyd = cubic years
sqft = square feet

The factor of 1.5 converts the in-place cyd of soil into excavated cyd.

Based on the estimates of the lateral and vertical extent of PCE-contaminated soil for the three PCE concentrations identified above obtained from Figures 4 through 8, the estimated quantities of PCE-contaminated soil that would need to be excavated at the former Al Phillips facility and disposed of are listed in Table 6-2 below.

Table 6-2. Estimated Cubic Yards and Tons of PCE Contaminated Soil

Contaminant Level	In-Place Cubic Yards	Excavated Cubic Yards[1]	Excavated Tons[2]
Protection of Groundwater 7 µg/kg	(9,450)	(14,174)	(18,427)
Interim Remedial Goal 100 µg/kg	565 (1,010)	848 (1,515)	1,145 (2,045)
Residential PRG 480 µg/kg	145 (350)	218 (525)	294 (709)
Industrial PRG 1,300 µg/kg	117 (150)	175 (225)	236 (304)

Notes:
[1] In-place cubic yard is approximately 1.5 excavated cubic yard.
[2] Tons calculated using a soil density of 100 pounds/cubic foot or 2,700 pounds/cubic yard and 1.0-ton equals 2,000 pounds.

The estimated cyd and tons of PCE contaminated soil shown in parenthesis in Table 6.2 are the revised values based on the results of the current assessment. The initial values are shown to the left of the revised values with the exception of the values related to protection of groundwater, as initial values for this scenario were not initially considered. As is evident, the quantity of PCE contaminated soil at the respective contaminant levels varies from 1.3 to 2.4 times the initially estimated values.

6.4 PRELIMINARY COST-BENEFIT ANALYSIS

The following preliminary cost-based analysis for excavation and disposal of PCE contaminated soil verses soil vapor extraction (SVE) at the former Al Phillips facility is provided to demonstrate the viability of these methods of remediation. Based on the substantial increase in cyd and tons of PCE contaminated soil at the former Al Phillips facility, an evaluation and cost comparison of SVE was deemed warranted.

Disposal of PCE-contaminated soils is regulated under the Code of Federal Regulations (CFR) Section 268.48 and Section 268.49 as an “F” listed waste (F002, in this case PCE-contaminated soil). CFR 268.48 specifies that PCE waste with concentrations up to 6 mg/kg (parts per million) or 6,000 µg/kg (parts per billion) meets the Universal Treatment Standard (UTS) and can be disposed of without treatment. CFR 268.49 states that there is an alternative Land Disposal Restriction (LDR) treatment standard of as much as 10 times the concentration of PCE-contaminated waste up to 60 mg/kg (ppm) or 60,000 µg/kg (ppb). The highest concentration detected beneath the former Al Phillips facility to date has been 120,000 µg/kg (ppb) or 120 mg/kg which is twice the 10 times rule for meeting the LDR treatment standard.

The closest disposal facility to the former Al Phillips facility is the US Ecology site located in Beatty, Nevada approximately 100 miles northwest of Las Vegas, Nevada. The facility can dispose of PCE-contaminated waste that meets the UTS of 6 ppm (6,000 ppb) or the LDR 10 times rule of 60 ppm (60,000 ppb) without any treatment. PCE-contaminated material that is over the LDR requirement of 60 ppm can be disposed of at the facility but requires chemical treatment so that it meets the LDR prior to disposal.

It is estimated that approximately 8.5 tons of PCE-contaminated soil from the site will require chemical treatment. The remainder of the estimated (Table 4-2) PCE-contaminated soil (18,427 tons > 7 µg/kg , 2,045 tons > 100 µg/kg, 709 tons > 480 µg/kg, or 304 tons > 1,300 µg/kg) could be disposed of without chemical treatment. Table 4-3 is a summary of the revised estimated costs for performing excavation, transportation, disposal, and reporting of PCE-contaminated soil from the former Al Phillips facility that exceeds NDEPs' recommended level to protect groundwater of 7 µg/kg, the IRG of 100 µg/kg, the EPA residential PRG of 480 µg/kg, and the EPA industrial PRG of 1,300 µg/kg. Table 4-3 compares these revised estimated dig/haul/disposal costs to the estimated long term cost for performing SVE treatment of PCE soil contamination These estimated costs constitute a revised cost-benefit analysis to aid in reaching an agreement with NDEP on what the appropriate SSCL for PCE-contaminated soil should be.

Table 6.3. Comparison of Estimated Remedial Costs

Remedial Goal	**Excavate & Backfill**[1]	**Transport**[2]	**Disposal**[3]	**Reporting**	**Total**
Protection of Groundwater 7 µg/kg	($1,134,600)	($489,000)	($1,925,000)	(12,000)	($3,560,600)
Interim Remedial Goal 100 µg/kg	$70,500 ($138,500)	$39,500 ($77,600)	$155,500 ($305,500)	$7,000 ($8,000)	$306,000 ($529,600)
Residential PRG 480 µg/kg	$68,000 ($180,400)	$10,500 ($27,900)	$41,000 ($108,800)	$6,000 ($7,000)	$159,000 ($324,100)
Industrial PRG 1,300 µg/kg	$65,000 ($92,100)	$8,500 ($12,100)	$33,000 ($46,800)	$6,500 ($7,500)	$146,500 ($158,500)
Remedial Goal	**SVE Pilot Study**[4]	**Air Permit**[5]	**System Start-up**[6]	**Operation and Reporting**[7]	**Total**
SVE to SSCL	($45,000)	($15,000)	($110,000)	($120,000)	($290,000)

Notes:

[1] Quantity of PCE contaminated soil is 18,427 tons > 7 µg/kg, 2,045 tons > 100 µg/kg, 709 tons > 480 µg/kg, and 304 tons > 1,300 µg/kg.

[2] Transport of soil in 746, 80, 16, and 13 truckloads, respectively based on the tonnage of soil to be

transported.
[3] Disposal based on $135/ton for soil not requiring treatment and $525/ton for soil requiring treatment.
[4] SVE pilot study including study plan
[5] Including construction and operation documentation
[6] Including utilities, system purchase/lease, and well install
[7] Operation for 24 months and reporting

The revised estimated excavation and SVE remedial costs for PCE contaminated soil shown in parenthesis in Table 4.3 are the revised values based on the results of the current assessment. The initial values are shown to the left of the revised values with the exception of the values related to protection of groundwater, as initial values for this scenario were not initially considered. The estimated excavation costs are based on the use of a mobile laboratory to perform quick turn-around analysis of confirmation soil samples collected on the bottom and sidewalls of the excavation. These costs are also based on the assumption that even though the quantity of PCE-contaminated soil that would be transported and disposed of is very different, soil with concentrations of PCE below the given concentration to protect groundwater, IRG, residential PRG, or industrial PRG will still need to be excavated to remove the soil that is destined for disposal. These respective costs also include costs for obtaining a dust permit and possibly an air quality permit for excavation of PCE-contaminated soil, and Environmental Manager fees. These costs also assume that the material placed in the excavation will not be a controlled and compacted backfill. If the property owner wants the backfill to be compacted and documented, then additional costs would be incurred.

The revised estimated transportation costs are based on a six-hour transport day using five end-dump trucks hauling a maximum of 19 tons of soil per load. This amounts to 746 days, 80 days, 16 days, and 13 days of transport time for the respective tons to be transported. The revised estimated disposal costs vary based on the quantity of soil to be disposed and the concentration of PCE contained in the soil.

The estimated SVE remedial costs are based on performing a SVE pilot test to assess the radius of influence so that an optimized SVE system can be selected for the site, selection of a catalytic reduction system for degradation of VOC rather than higher long term costs of utilizing activated carbon, and operation and reporting for the system for an estimated period of two years. The SVE system would likely include the reutilization of system effluent vapor for re-injection into the ground at the parameter of the lateral extent of PCE soil contamination to enhance remediation of VOC in the vadose zone. Installation of an SVE system would include the use of on site power with is present at the site, the use of propane as a feeder fuel for the system, and installation of vapor extraction wells near the center of the PCE soil plume. Excavation of PCE contaminated soil would not be performed as part of the installation so that the costs for excavation, transport, and disposal could be better utilized for installation and operation of the SVE system.

These revised estimated costs do not include the cost related to the investigation or monitoring of associated PCE groundwater contamination, or groundwater remediation. This revised cost-benefit analysis has been prepared and submitted to NDEP in preparation for approval of a cost effective SSCL for the site.

7 SOURCE AREA REMEDIATION

7.1 SOIL REMEDIATION

The main purpose of the Source Areas Soil Assessment was to evaluate what volume of PCE-contaminated soil, above a cost effective Site Specific Cleanup Level (SSCL), could be excavated and disposed of in order to protect the environment. It was Al Phillips' intent to remove as much PCE-contaminated soil from the site as was economically possible. Based on the findings of this and prior assessments at the source area, it is estimated that the cost for excavation and disposal of PCE contaminated soil would be as follows:

- To protect groundwater at 7 µg/kg — $3.56 million
- IRG of 100 µg/kg — $529,600
- EPA residential PRG of 480 µg/kg — $324,100
- EPA industrial PRG of 1,300 µg/kg — $158,500
- SVE to a SSCL — $290,000

Remediation of PCE contaminated soil by SVE is a more cost effective method in the end and has the potential to more effectively attain a lower SSCL. By utilizing SVE, the costs for remediation over a two-year period would average out at approximately $12,000 per month, which is more practical than the expense of excavation and disposal incurred over a much shorter period. An enhanced SVE system with injection of heated air at the parameter of the PCE soil plume will increase soil temperatures and effectively create a pressure gradient between the outside and center of the soil plume accelerating removal of PCE from the vadose zone.

Based on the known concentrations of PCE in the source area, the quantity (pounds) of PCE can be calculated. Once a SVE pilot test has been performed, the radius of influence, an approximate soil density, and percent void space is estimated/measured, and the optimum SEV system is selected, then an approximate remedial period can be calculated and a SSCL can be selected.

NDCI respectfully requests that NDEP consider the selection of SVE as the most cost effective remedial method at the source area of the former Al Phillips Maryland Square facility and approve the method for implementation.

7.2 GROUNDWATER REMEDIATION

The final goal of the source area assessment was to further evaluate strategic locations for installation of a future groundwater remediation system at the site. Based on the findings of this Source Area Soil Assessment the best area for future groundwater remediation is near the western edge and the center of the PCE soil plume between boreholes B-14 and B-23 on the east and borehole B-12 on the west (Figure 6). Future groundwater remediation at the former Al Phillips facility will be considered and evaluated in a future site-specific groundwater remedial action plan. Based on current and future findings and performance of a potassium permanganate injection program at Nellis Air Force Base, located in North Las Vegas, Nevada, NDCI could consider implementation of a similar remediation plan at the Maryland Square site.

7.3 REMEDIAL SCHEDULE

This Source Area Soil Assessment report has been submitted to NDEP for review and approval of implementation of the selected SVE remedial method and development of a SSCL. Once approved by NDEP Al Phillips will initiate implementation of the remedial activities. The following remedial schedule is proposed:

- Approval of the proposed remedial method by NDEP – March 16, 2007
- Submit SEV pilot testing air permit to Clark County Air Quality (CCAQ) for review and approval – March 30, 2007 or 14 days after approval of the remedial method by NDEP
- Initiation of SVE pilot test – May 7, 2007 or 14 days after receipt of the pilot test air permit from CCAQ. Some portion of this work would be performed an the assumption that the air permit was being issued.
- Report of SVE pilot test – May 23, 2007 or 14 days after completion of pilot test
- Completion of SVE system selection – May 30, 2007 or 7 days after completion of pilot test report
- Submit revised SEV air permit to CCAQ for review and approval – May 30, 2007 or 7 days after completion of the pilot test report
- Initiation of SVE system install – June 27, 2007 or 14 days after receipt of the SVE system permit to construct from CCAQ
- Start up of the SEV system – July 11, 2007 or 14 days after initiation of SEV system install
- Operation and reporting – July 2007 to unidentified date
- Selection and approval of SSCL – unidentified date
- Drilling and confirmation soil sampling to confirm clean up of PCE soil plume – unidentified date.

8 QUALIFICATIONS AND SIGNATURES

This Source Area Site Assessment report was prepared by URS for Al Phillips and submitted to NDEP. The qualifications of the individuals involved in the preparation of this report are known to Al Phillips and NDEP.

Prepared by:

Scott Ball

Scott Ball, C.E.M.
Project Environmental Manager

Reviewed by:

Scott Ball for

Dennis Connair
Senior Technical Reviewer

8.1 CERTIFIED ENVIRONMENTAL MANAGER STATEMENT

The following statement is required by NDEP for Environmental Managers who practice in Nevada:

> *"I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein."*
>
> *I, Scott Ball, hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances.*

Scott Ball

Scott Ball
Certified Environmental Manager No. 1316
(Expires October 15, 2007)

9 REFERENCES

Converse Consultants, 2000. Offsite Investigation, Maryland Square Shopping Center, Las Vegas, NV dated November 28, 2000.

-----, 2001. A through K Data Research Report, dated August 22, 2001.

-----, 2002a. Work Plan – Additional Site Investigation, dated January 11, 2002.

-----, 2002b. Additional Soil and Groundwater Investigation, dated November 13, 2002.

-----, 2003a. Additional Soil and Groundwater Investigation, dated May 16, 2003.

-----, 2003b. Preliminary Corrective Action Plan (CAP), dated June 27, 2003.

-----, 2003c. Work Plan – Additional Site Activities, dated September 12, 2003.

-----, 2003d. Groundwater Monitoring Report – 3rd Quarter 2003, dated October 31, 2003.

-----, 2004. Well Installation/Slug Testing/Groundwater Monitoring Report – 4th Quarter 2003 and 1st Quarter 2004, dated March 2004.

URS, 2004. Revised Work Plan, Proposed Subsurface Investigation, Former Al Phillips the Cleaner Site, Maryland Square Shopping Center, Las Vegas, NV, dated September 10, 2004.

URS, 2005. Subsurface Investigation, Former Al Phillips the Cleaner Site, Maryland Square Shopping Center, Las Vegas, NV, dated July 11, 2005 .

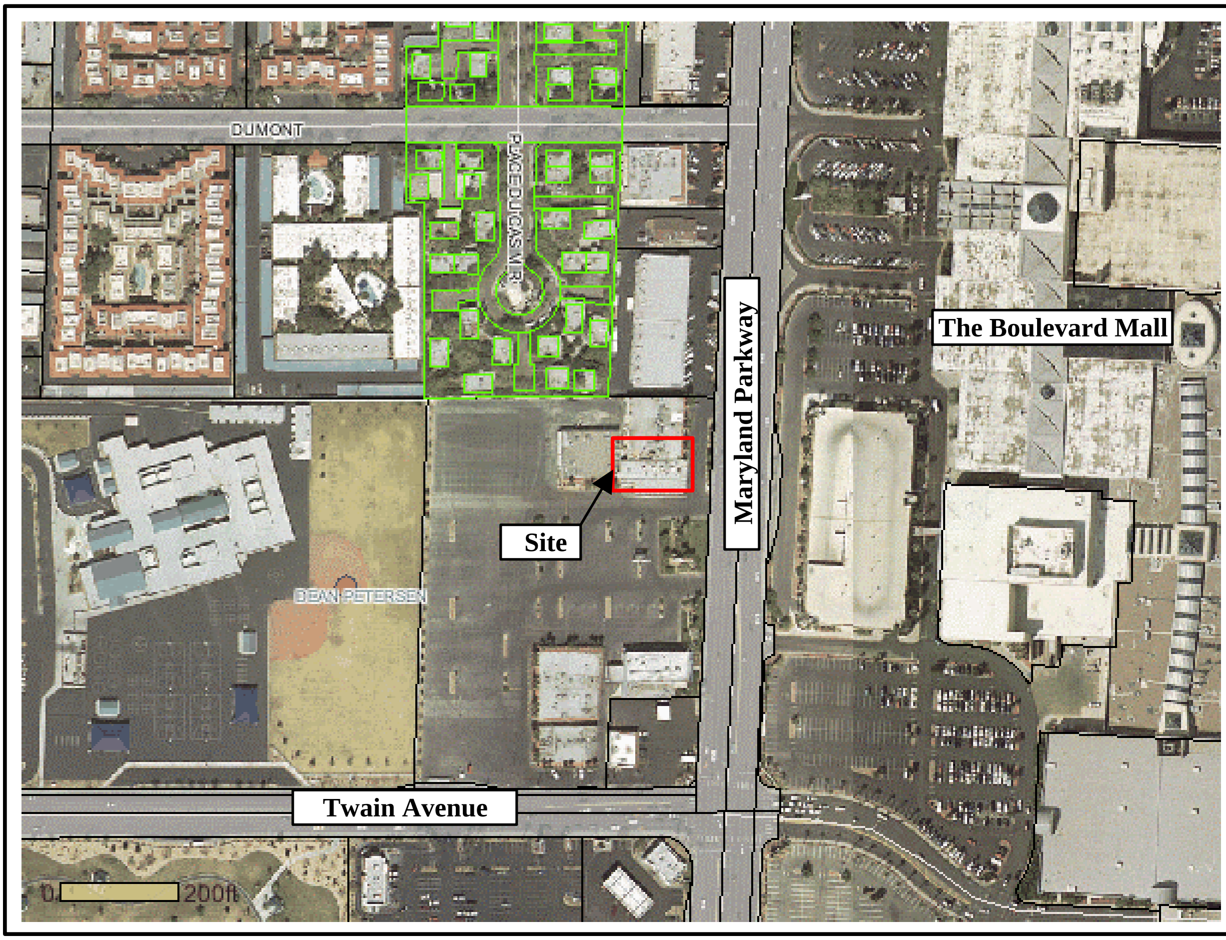
URS, 2005. Quarterly Groundwater Sampling, Former Al Phillips the Cleaner Site, Maryland Square Shopping Center, Las Vegas, NV, dated September 26, 2005.

URS, 2005. Proposed Remedial Pilot Study, Former Al Phillips the Cleaner Site, Maryland Square Shopping Center, Las Vegas, NV, dated December 27, 2005.

URS, 2006. Source Removal Corrective Action Plan, Former Al Phillips the Cleaner Site, Maryland Square Shopping Center, Las Vegas, NV, dated November 13, 2006.

US Geological Survey 7.5-minute Las Vegas SW, Nevada Quadrangle, 1983 modified.

FIGURES



Source: Clark County Assessors Web Site
Scale: 200 feet

N

SITE LOCATION MAP

Source Area Soil Assessment
Al Phillips The Cleaner
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

URS

January 2007
Job No. 26698724

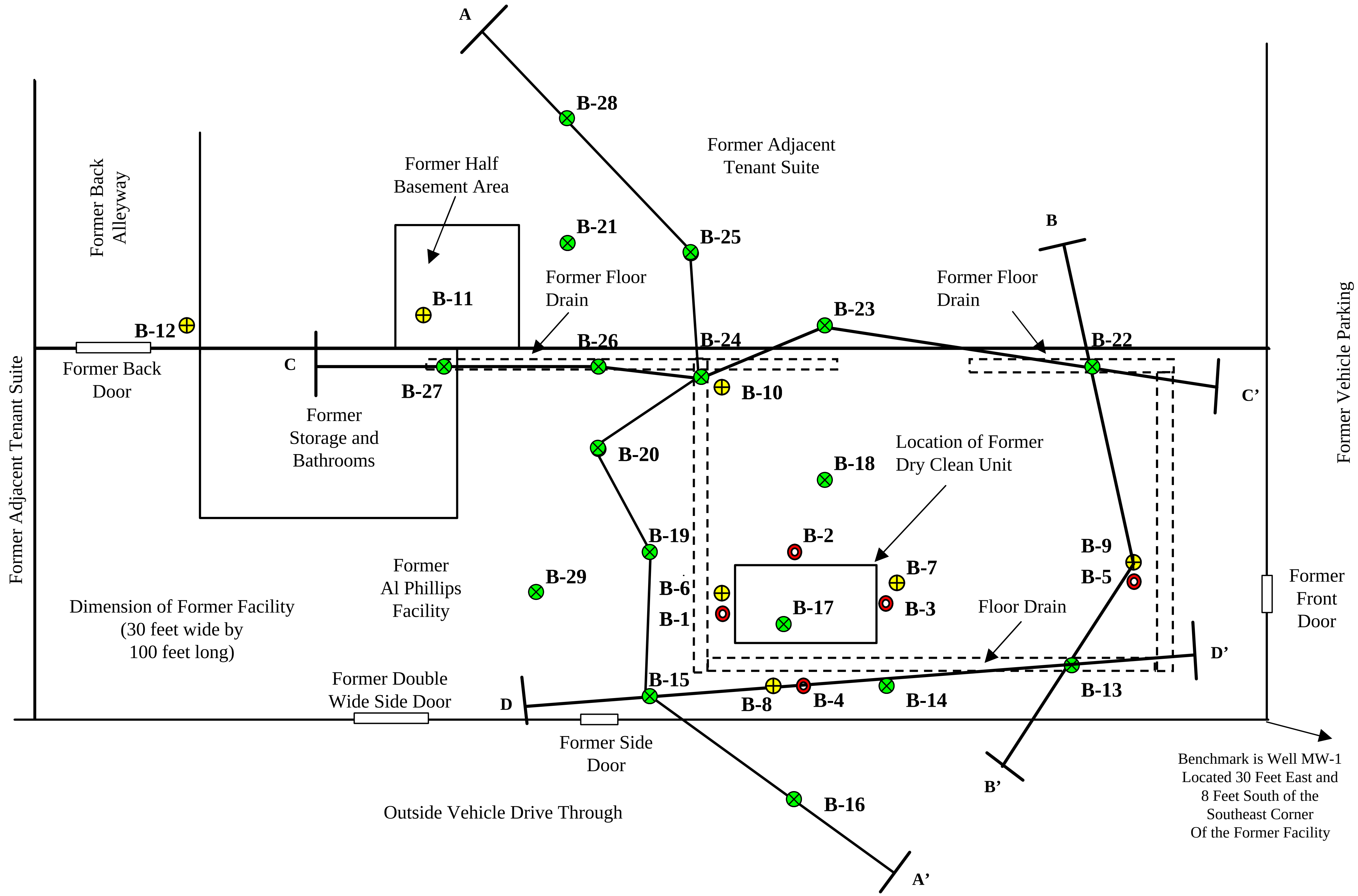
MS Source Area Assessment Fig 1.ppt FIGURE 1

Concentration of PCE in Soil Boreholes
(January 2007)

Sample Number / Sample Elevation / PCE Concentration

B-6-5	1991	830	B-19-10	1984.5	21
B-6-10	1986	300	B-19-13	1981.5	270
B-6-15	1981	1,500	B-19-15	1979.5	1,500
B-7-5	1991	850	B-20-5	1989.5	270
B-7-10	1986	52	B-20-10	1984.5	1,200
B-7-15	1981	169	B-20-13	1981.5	1,600
B-8-5	1991	4,700	B-20-15	1979.5	860
B-8-10	1986	360	B-21-8	1984	110
B-8-15	1981	640	B-21-13	1979	380
B-9-5	1991	ND	B-22-0.5	1993	9
B-9-10	1986	38	B-22-1.5	1992	21
B-9-15	1981	ND	B-22-10.5	1983	91
B-10-5	1991	1,200	B-22-14.5	1979	380
B-10-10	1986	120,000	B-23-3	1989.5	350
B-10-15	1981	3,500	B-23-5	1987.5	4
B-11-2.5	1946	46	B-23-10	1982.5	92
B-12-3.5	1992	ND	B-23-13	1979.5	86
B-13-13	1980	110	B-24-5	1988.5	56,000
B-13-16	1977	300	B-24-8	1985.5	6,800
B-14-6.5	1988	340	B-24-13	1980.5	4,300
B-14-8	1987.5	64	B-25-5	1987	490
B-14-10	1985.5	62	B-25-10	1982	290
B-14-16	1979.5	450	B-25-13	1979	140
B-15-5	1990	460	B-26-2.5	1991	390
B-15-8	1987	44	B-26-5	1988	900
B-15-15	1980	94	B-26-8	1985	870
B-16-7.5	1986.5	290	B-26-10	1983	7,200
B-16-10.5	1983.5	210	B-26-13	1980	1,000
B-16-15.5	1978.5	150	B-27-5	1987	430
B-17-5	1990	460	B-27-13	1979	540
B-17-10	1985	570	B-28-10	1982	91
B-17-15	1980	680	B-28-13	1979	74
B-18-5	1989	140	B-29-5	1990	320
B-18-13	1981	480	B-29-10	1985	ND
B-18-15	1979	140	B-29-15	1980	27
B-19-5	1989.5	560	B-29-15.5	1979	6

PCE Concentrations are in microgram per kilogram (ug/kg).
Elevations are in feet (ft.). ND = none detected.



Source: Field Site Sketch
Scale: 0 ——— 10 Feet

N

Legend:

- ⊕ Approximate Location of Borehole Drilled by URS 2005.
- ◎ Approximate Location of Borehole Drilled by Converse.
- ⊗ Approximate Location of Borehole Drilled by URS 2007.
- A – A' Approximate Location of Lithologic Cross-Section.

URS

SITE PLAN

Source Area Soil Assessment
Al Phillips The Cleaner
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

January 2007
Job No. 26698724

MS Source Area Assessment Fig 2.ppt FIGURE 2

Groundwater Elevations in Monitoring Wells (December 2006)

Well	Elevation (ft.)
MW-1	1973.16
MW-7	1973.38
MW-12	1981. 45
MW-17	1972.51

Source: Clark County Assessors Web Site
Scale: 0Feet 30Feet

N

Legend:

MW-17 1972.51 — Approximate Location of Monitoring Well Installed by URS Showing Well Number and Groundwater Elevation.

MW-12 1981.45 — Approximate Location of Monitoring Well Installed by Converse Showing Well Number and Groundwater Elevation.

Approximate Groundwater Contour and Elevation (showing direction of groundwater flow).

Approximate Location of Sanitary Sewer.

URS

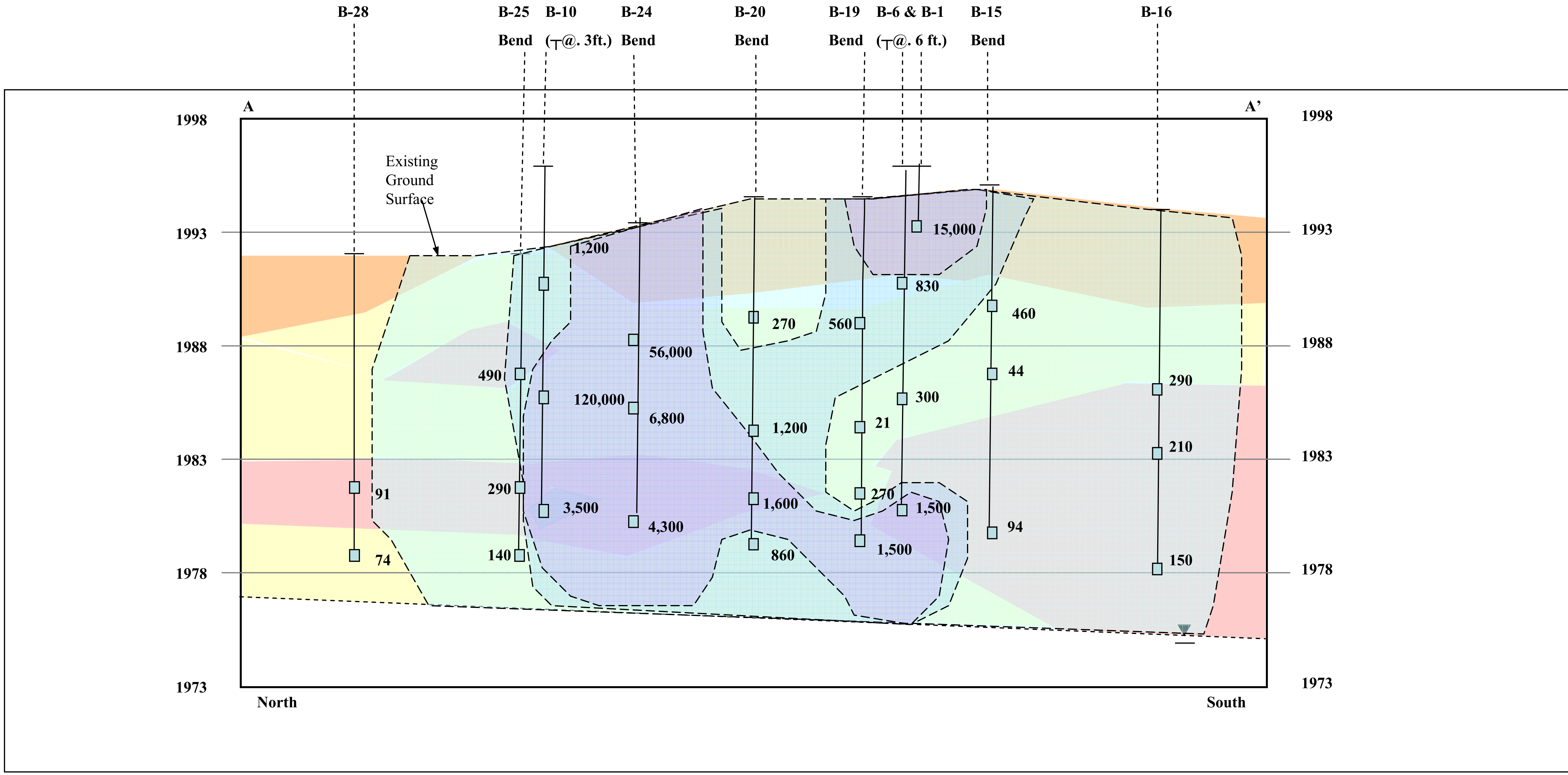
GROUNDWATER CONTOUR MAP

Source Area Soil Assessment
Al Phillips The Cleaner
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

January 2007
Job No. 26698724

MS Source Area Assessment Fig 3.ppt FIGURE 3

CROSS SECTION A – A'



Horizontal Scale: 0 ⊢—⊣ 10 feet

Vertical Scale: 0 ⊢—⊣ 5 feet

Note:

Boreholes B-1, B-6, and B-10 were drilled from the elevation of the concrete floor that existed at the former facility.

Legend:

Approximate Lithologic Boundary Changes

- Above Ground
- Sandy Silt (Fine)
- Caliche
- Sandy Silt (Fine)
- Sand

Approximate Groundwater Table

Estimated Vertical and Lateral Area of PCE Contaminated Soil at 100 ug/kg, 480 ug/kg, and 1,300 ug/kg (Based on April 2005 Soil Samples, URS).

350 PCE Concentration in ug/mg at Corresponding Depth.

URS

CROSS-SECTION A-A'

Source Area Soil Assessment

Al Phillips The Cleaner

Maryland Square Shopping Center

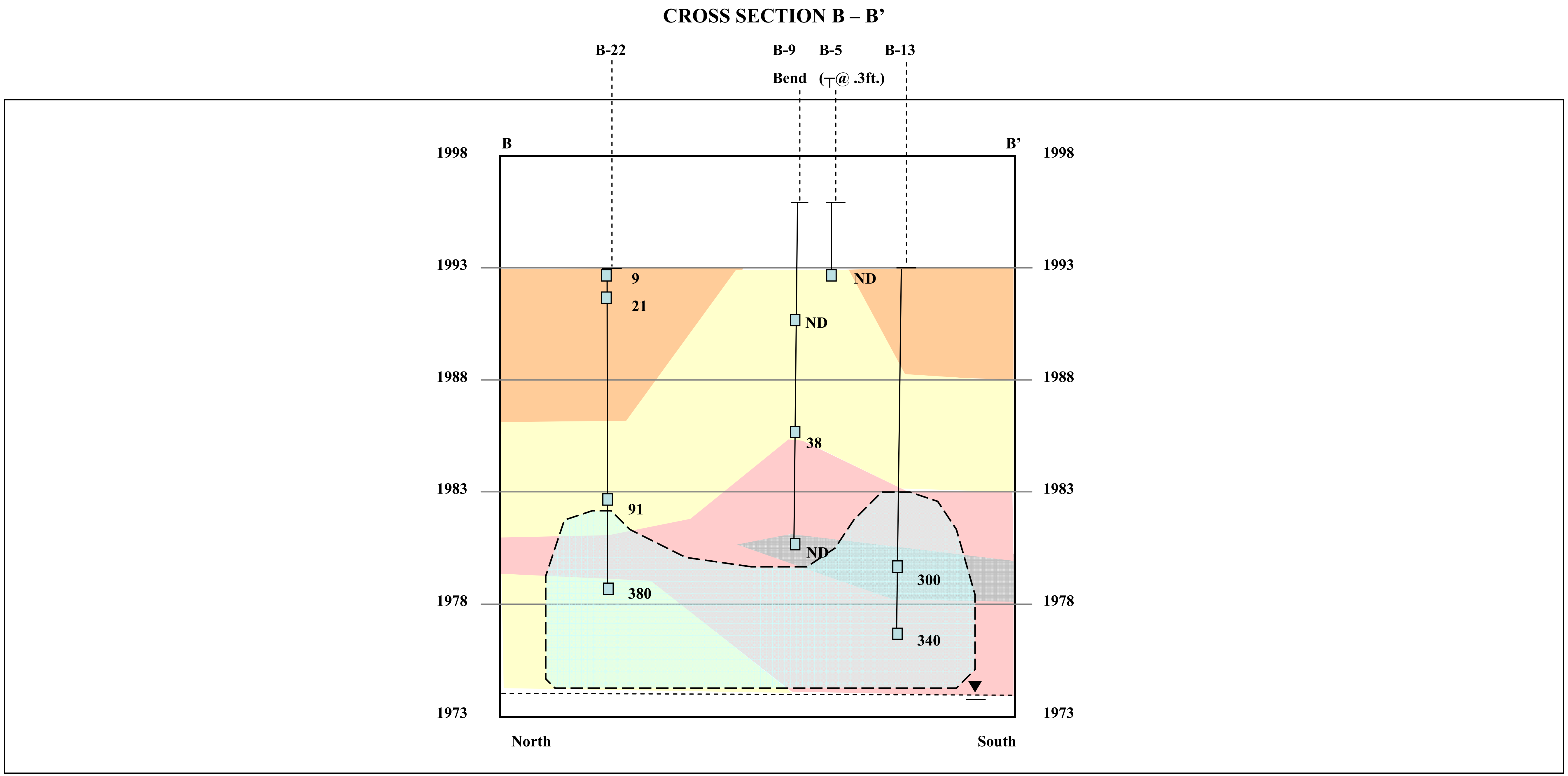
3661 South Maryland Parkway

Las Vegas, Nevada

January 2007

Job No. 26698724

MS Source Area Assessment Fig 4.ppt FIGURE 4



Horizontal Scale: 0 10 feet

Vertical Scale: 0 5 feet

Note:

Boreholes B-5 and B-9 were drilled from the elevation of the concrete floor that existed at the former facility.

Legend:

Approximate Lithologic Boundary Changes

- Above Ground
- Sandy Silt (Fine)
- Caliche
- Sandy Silt (Fine)
- Sand

Approximate Groundwater Table

Estimated Vertical and Lateral Area of PCE Contaminated Soil at 100 ug/kg.

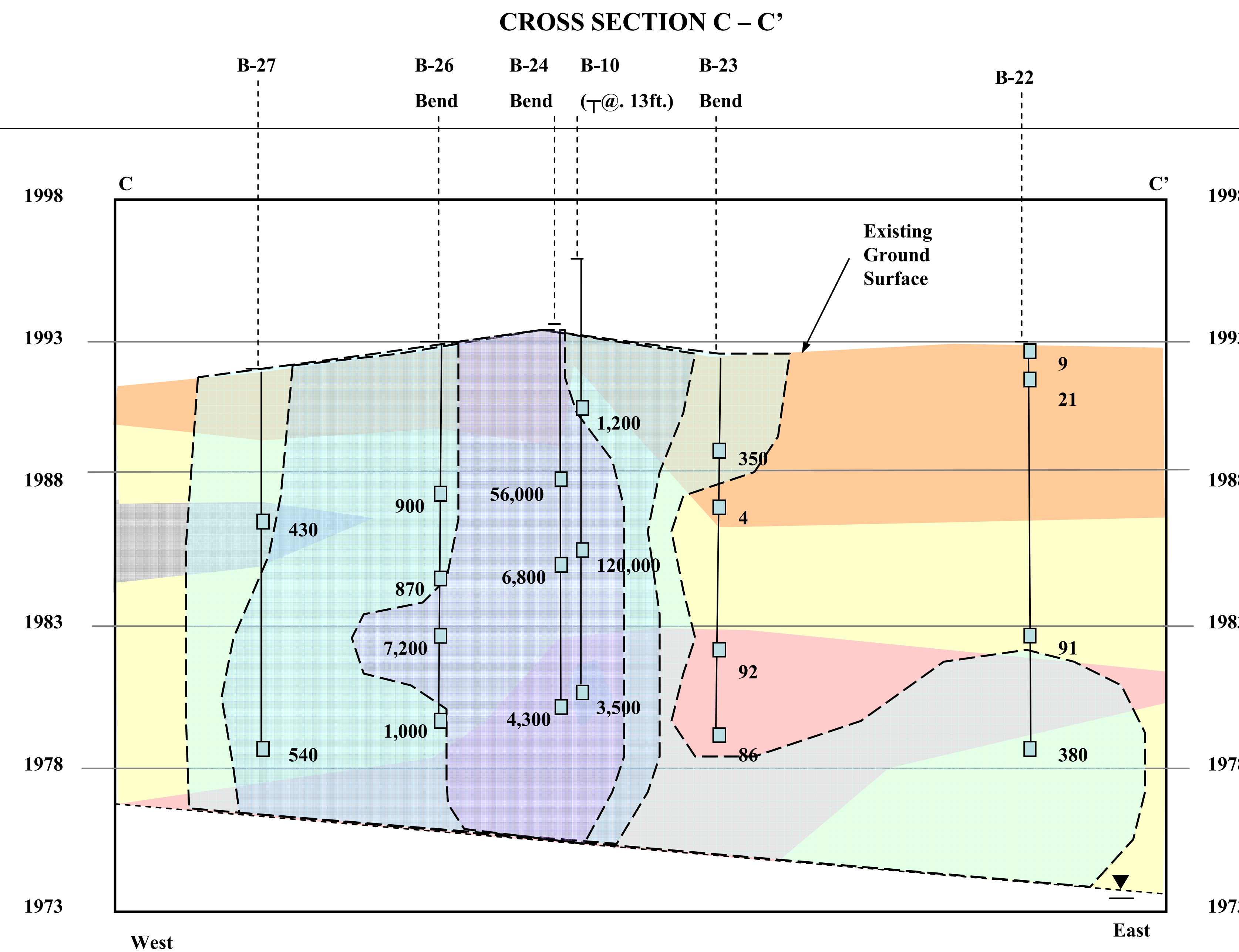
350 PCE Concentration in ug/mg at Corresponding Depth.

CROSS-SECTION B-B'

Source Area Soil Assessment
Al Phillips The Cleaner
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

January 2007
Job No. 26698724

MS Source Area Assessment Fig 5.ppt FIGURE 5



Horizontal Scale: 0 ⊢——⊣ 10 feet

Vertical Scale: 0 ⊢——⊣ 5 feet

Note:

Borehole B-10 was drilled from the elevation of the concrete floor that existed at the former facility.

Legend:

Approximate Lithologic Boundary Changes

- Above Ground
- Sandy Silt (Fine)
- Caliche
- Sandy Silt (Fine)
- Sand

Approximate Groundwater Table

Estimated Vertical and Lateral Area of PCE Contaminated Soil at 100 ug/kg, 480 ug/kg, and 1,300 ug/kg.

350 PCE Concentration in ug/mg at Corresponding Depth.

CROSS-SECTION C-C'

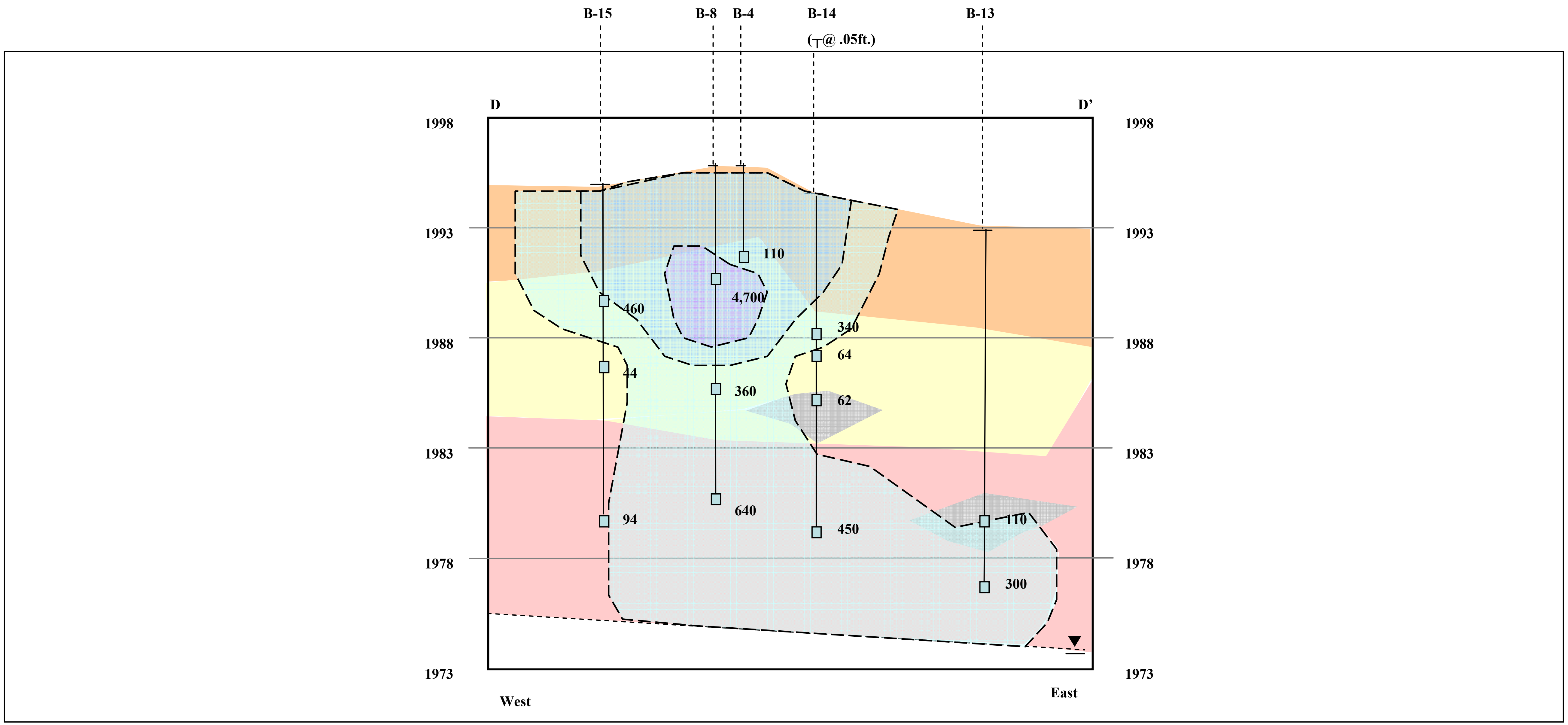
Source Area Soil Assessment
Al Phillips The Cleaner
Maryland Square Shopping Center
3661 South Maryland Boulevard
Las Vegas, Nevada

January 2007
Job No. 26698724

MS Source Area Assessment Fig 6.ppt

FIGURE 6

CROSS SECTION D – D'



Horizontal Scale: 0 — 10 feet

Vertical Scale: 0 — 5 feet

Note:

Boreholes B-4 and B-8 were drilled from the elevation of the concrete floor that existed at the former facility.

Legend:

Approximate Lithologic Boundary Changes

- Above Ground
- Sandy Silt (Fine)
- Caliche
- Sandy Silt (Fine)
- Sand

Approximate Groundwater Table

Estimated Vertical and Lateral Area of PCE Contaminated Soil at 100 ug/kg, 480 ug/kg, and 1,300 ug/kg.

350 PCE Concentration in ug/mg at Corresponding Depth.

CROSS-SECTION D-D'

Source Area Soil Assessment

Al Phillips The Cleaner

Maryland Square Shopping Center

3661 South Maryland Parkway

Las Vegas, Nevada

January 2007

Job No. 26698724

MS Source Area Assessment Fig 7.ppt

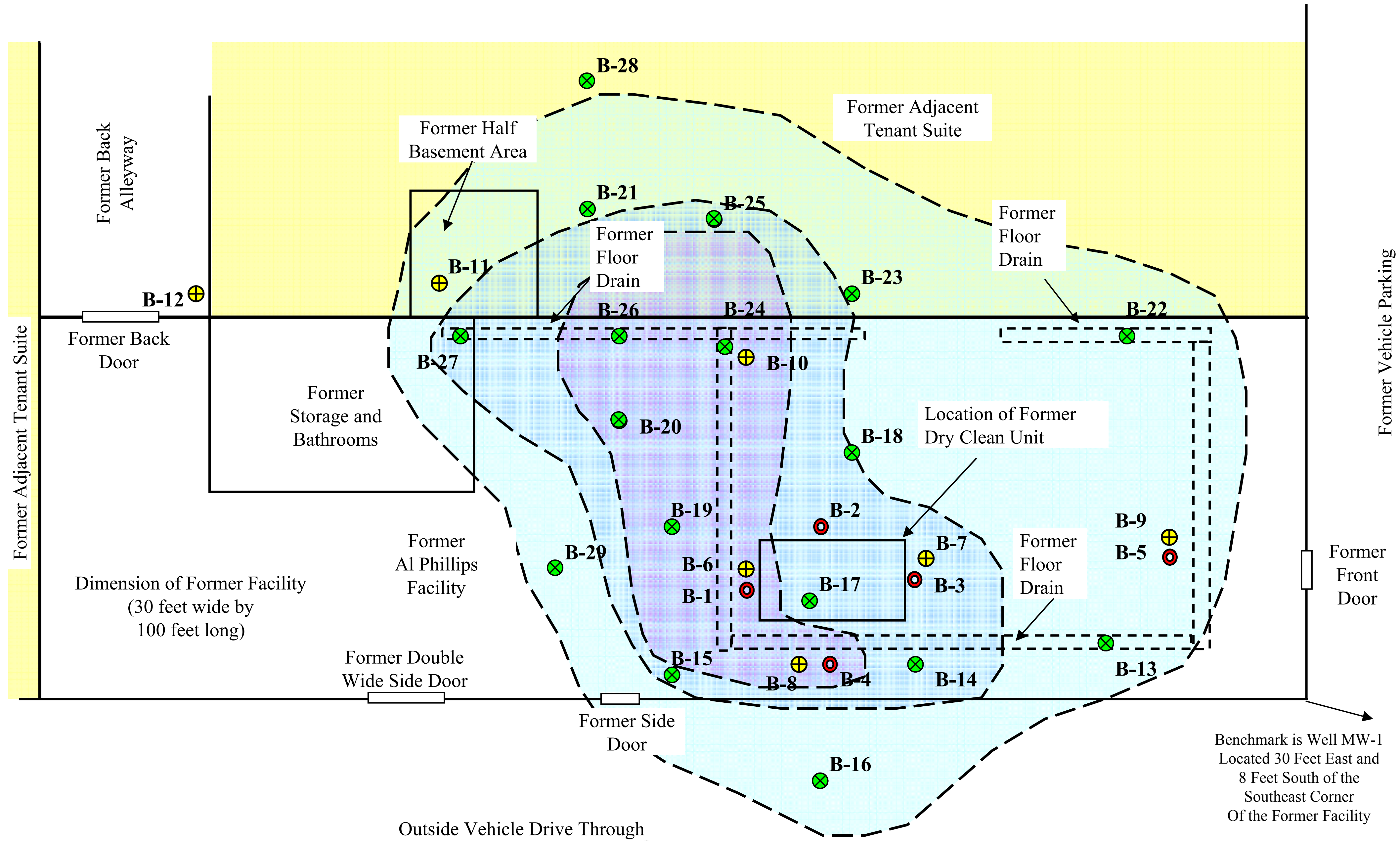
FIGURE 7

Concentration of PCE in Soil Boreholes
(January 2007)

Sample Number / Sample Elevation / PCE Concentration

B-6-5	1991	830	B-19-10	1984.5	21
B-6-10	1986	300	B-19-13	1981.5	270
B-6-15	1981	1,500	B-19-15	1979.5	1,500
B-7-5	1991	850	B-20-5	1989.5	270
B-7-10	1986	52	B-20-10	1984.5	1,200
B-7-15	1981	169	B-20-13	1981.5	1,600
B-8-5	1991	4,700	B-20-15	1979.5	860
B-8-10	1986	360	B-21-8	1984	110
B-8-15	1981	640	B-21-13	1979	380
B-9-5	1991	ND	B-22-0.5	1993	9
B-9-10	1986	38	B-22-1.5	1992	21
B-9-15	1981	ND	B-22-10.5	1983	91
B-10-5	1991	1,200	B-22-14.5	1979	380
B-10-10	1986	120,000	B-23-3	1989.5	350
B-10-15	1981	3,500	B-23-5	1987.5	4
B-11-2.5	1946	46	B-23-10	1982.5	92
B-12-3.5	1992	ND	B-23-13	1979.5	86
B-13-13	1980	110	B-24-5	1988.5	56,000
B-13-16	1977	300	B-24-8	1985.5	6,800
B-14-6.5	1988	340	B-24-13	1980.5	4,300
B-14-8	1987.5	64	B-25-5	1987	490
B-14-10	1985.5	62	B-25-10	1982	290
B-14-16	1979.5	450	B-25-13	1979	140
B-15-5	1990	460	B-26-2.5	1991	390
B-15-8	1987	44	B-26-5	1988	900
B-15-15	1980	94	B-26-8	1985	870
B-16-7.5	1986.5	290	B-26-10	1983	7,200
B-16-10.5	1983.5	210	B-26-13	1980	1,000
B-16-15.5	1978.5	150	B-27-5	1987	430
B-17-5	1990	460	B-27-13	1979	540
B-17-10	1985	570	B-28-10	1982	91
B-17-15	1980	680	B-28-13	1979	74
B-18-5	1989	140	B-29-5	1990	320
B-18-13	1981	480	B-29-10	1985	ND
B-18-15	1979	140	B-29-15	1980	27
B-19-5	1989.5	560	B-29-15.5	1979	6

PCE Concentrations are in microgram per kilogram (ug/kg).
Elevations are in feet (ft.). ND = none detected.



Source: Field Site Sketch
Scale: 0 10 Feet

URS

Legend:

N

- Approximate Location of Borehole Drilled by URS 2005.
- Approximate Location of Borehole Drilled by Converse.
- Approximate Location of Borehole Drilled by URS 2007.
- A – A' Approximate Location of Lithologic Cross-Section.
- Estimated Lateral Area of PCE Contaminated Soil at 100 ug/kg, 480 ug/kg, and 1,300 ug/kg.

APPROXIMATE EXTENT OF PCE CONTAMINATED SOIL

Source Area Soil Assessment
Al Phillips The Cleaner
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

January 2007
Job No. 26698724
MS Source Area Assessment Fig 8.ppt

FIGURE 8

APPENDIX A – BOREHOLE LOGS

APPENDIX B – PHOTOGRAPHS OF FILED ACTIVITIES

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location: Maryland Square Shopping Center	Project No.
Al Phillips The Cleaner	Source Area Soil Assessment	26698724

Photo No. 1

Location of Photo:
Former Maryland Square Al Phillips Facility.

View Direction of Photo:
Facing north.

Description:

Truck-mounted hollow stem auger drill rig located at former Al Phillips facility. Shows drilling of borehole in progress.

Photo No. 2

Location of Photo:
Former Maryland Square Al Phillips Facility.

View Direction of Photo:
Facing north.

Description:

Equipment inspection at former Al Phillips facility during drilling process.

PHOTOGRAPHIC RECORD

Client Name:	Site Location: Maryland Square Shopping Center	Project No.
Al Phillips The Cleaner	Source Area Soil Assessment	26698724

Photo No. 3

Location of Photo:
Former Maryland Square Al Phillips Facility.

View Direction of Photo:
Facing north.

Description:

Truck-mounted drill rig located at former Al Phillips facility. Shows driving of sampling head with 140-pound drive hammer.

Photo No. 4

Location of Photo:
Former Maryland Square Al Phillips Facility.

View Direction of Photo:
Facing south.

Description:

Truck-mounted drill rig located at former Al Phillips facility. Shows overview of drilling process. The sampling station and equipment decontamination area are visible.

PHOTOGRAPHIC RECORD

Client Name:	Site Location: Maryland Square Shopping Center	Project No.
Al Phillips The Cleaner	Source Area Soil Assessment	26698724

Photo No. 5

Location of Photo:
Former Maryland Square Al Phillips Facility.

View Direction of Photo:
Facing south.

Description:

Truck-mounted drill rig located at former Al Phillips facility. The driller is counting hammer blows during process of advancing 6-inch stainless sampling sleeves.

Photo No. 6

Location of Photo:
Former Maryland Square Al Phillips Facility.

View Direction of Photo:
Facing east.

Description:

Truck-mounted drill rig located at former Al Phillips facility. Borehole drilling in process. The Boulevard Mall and Maryland Parkway are visible in background.

APPENDIX C – CHAIN-OF-CUSTODY FORMS AND ANALYITICAL RESULTS